

Fig. 1
(prior art)

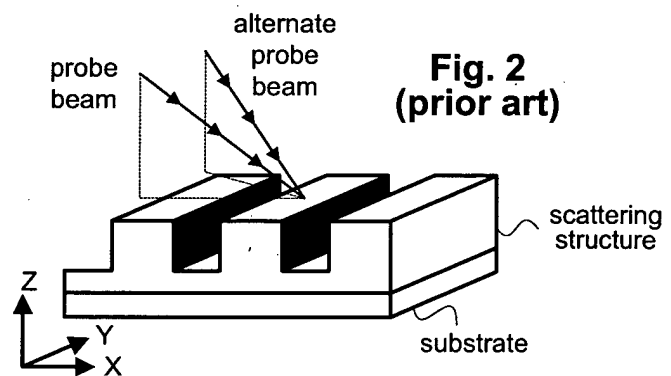
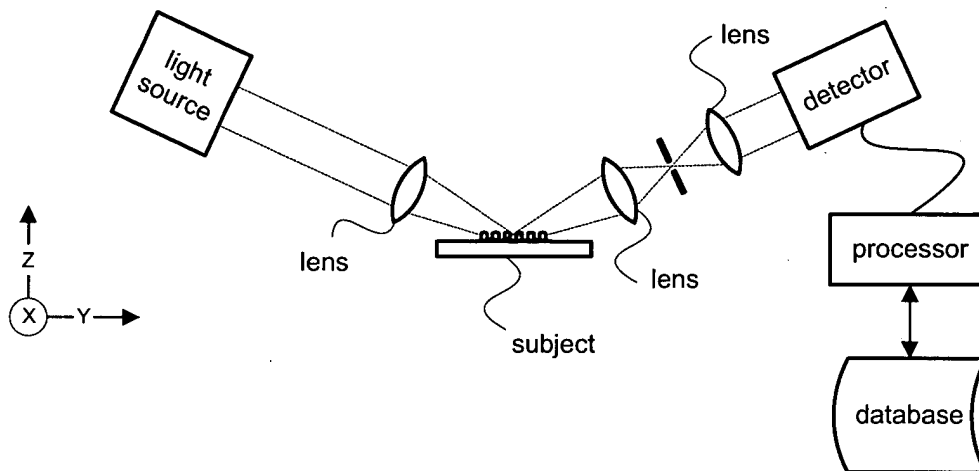


Fig. 2
(prior art)

Fig. 3
(prior art)

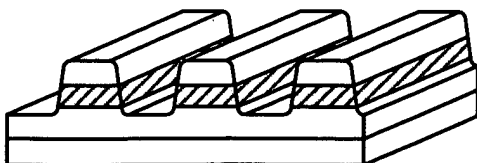


Fig. 4A
 (prior art)

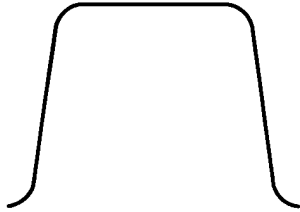


Fig. 4B
 (prior art)

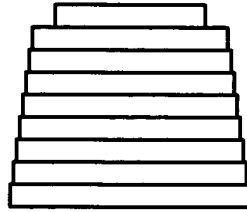


Fig. 4C
 (prior art)

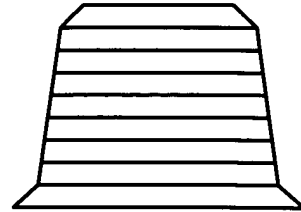


Fig. 5A

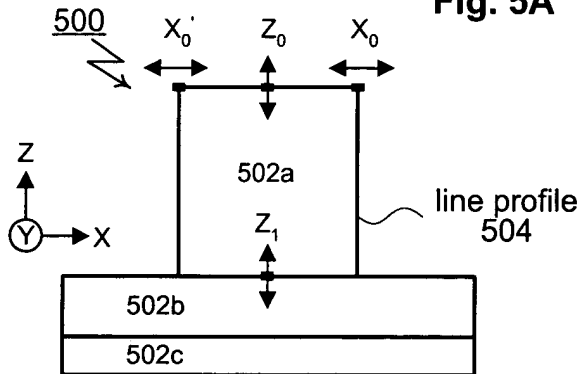


Fig. 5B

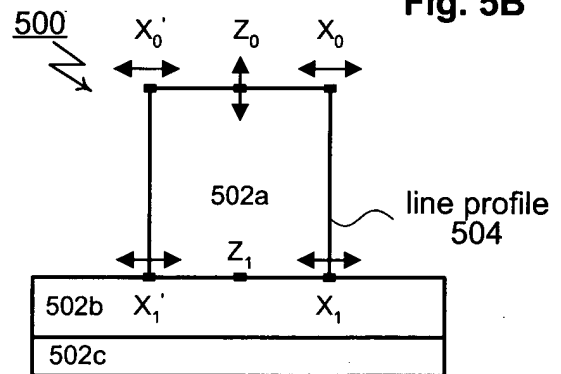
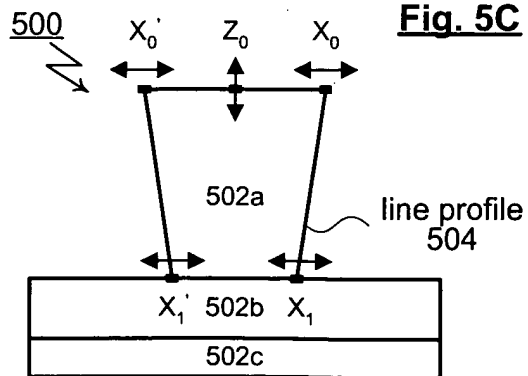
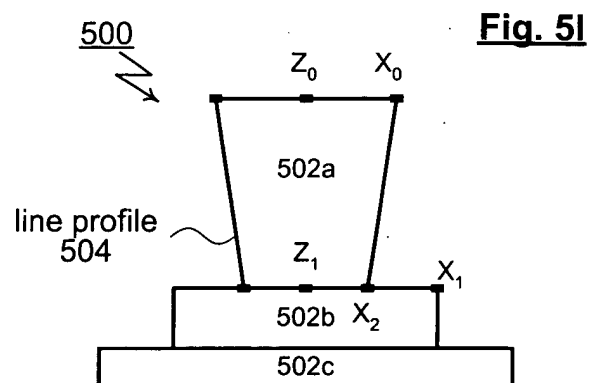
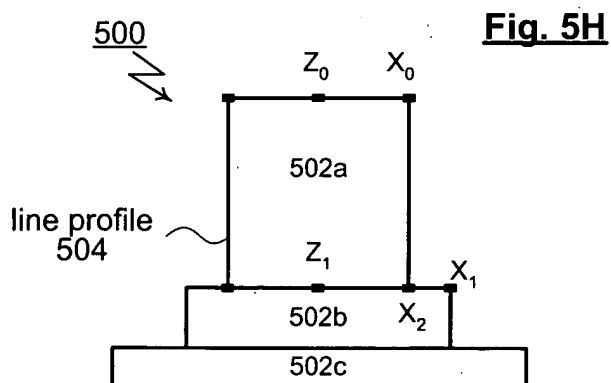
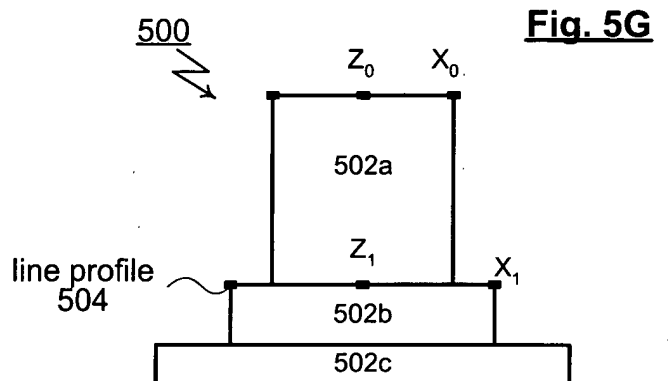
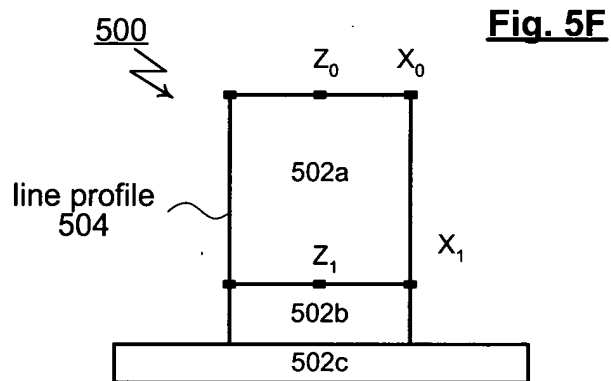
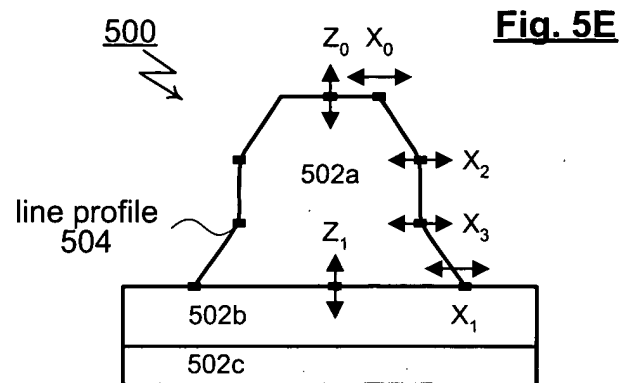
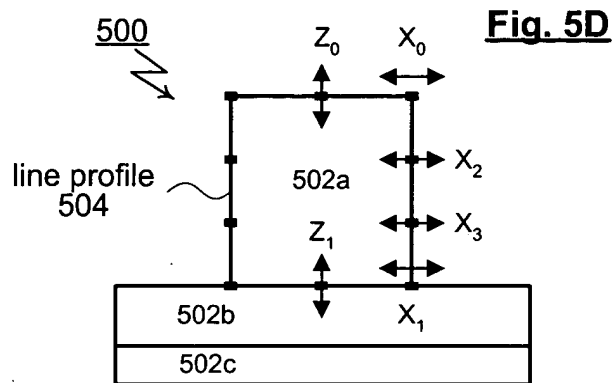
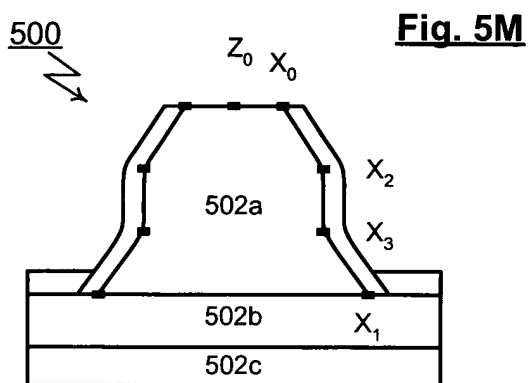
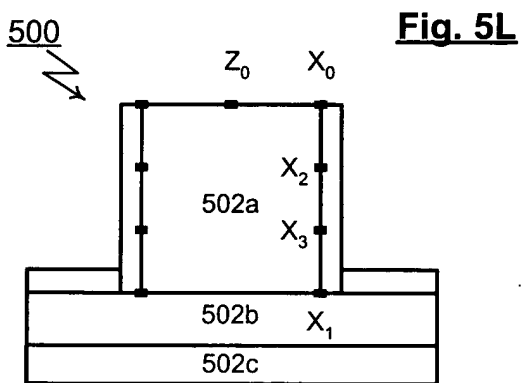
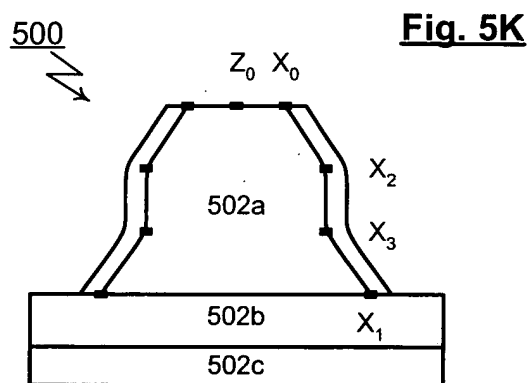
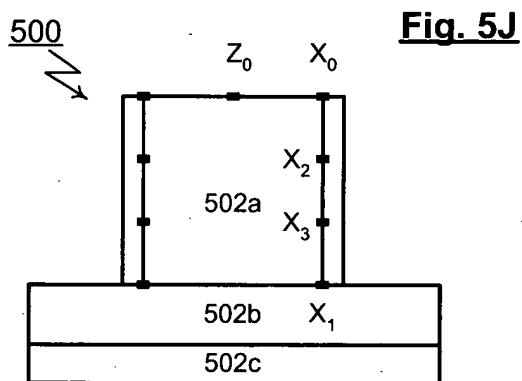
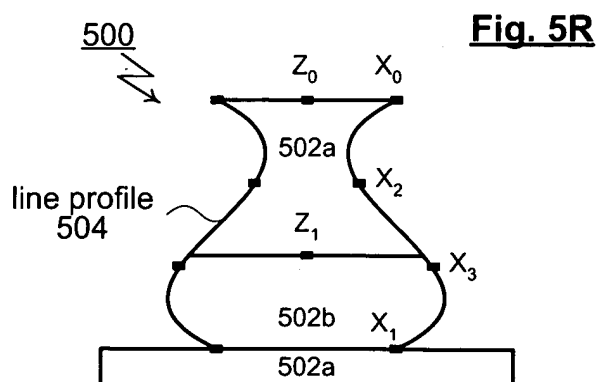
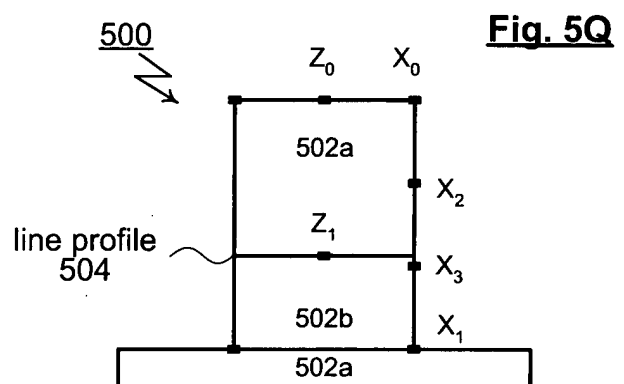
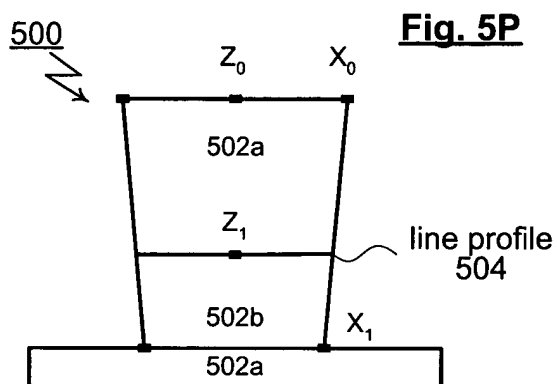
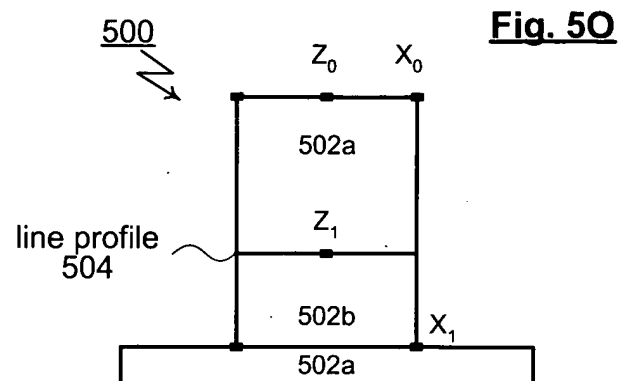
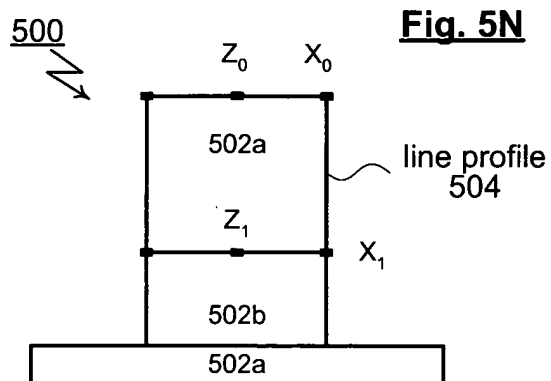


Fig. 5C









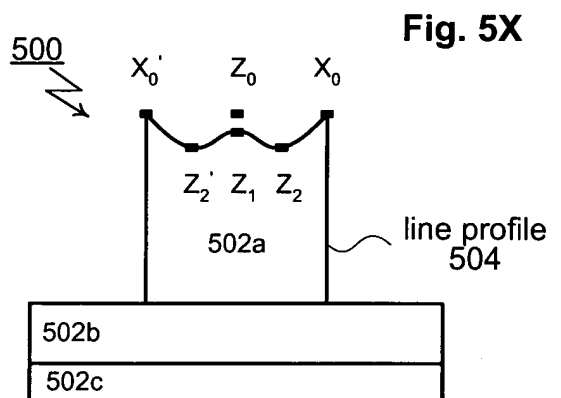
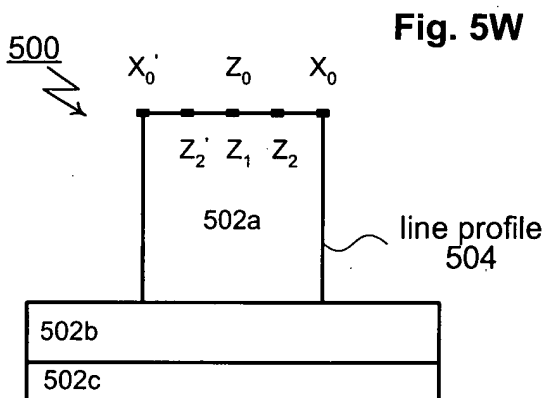
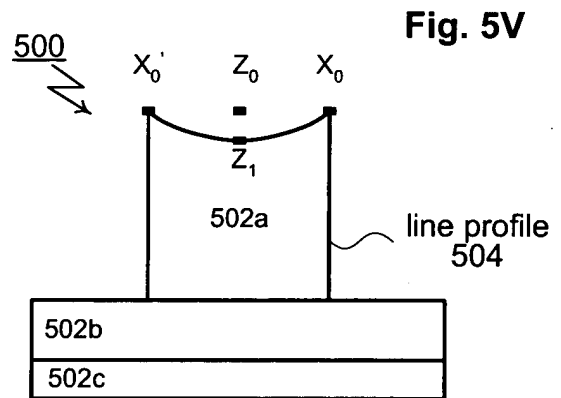
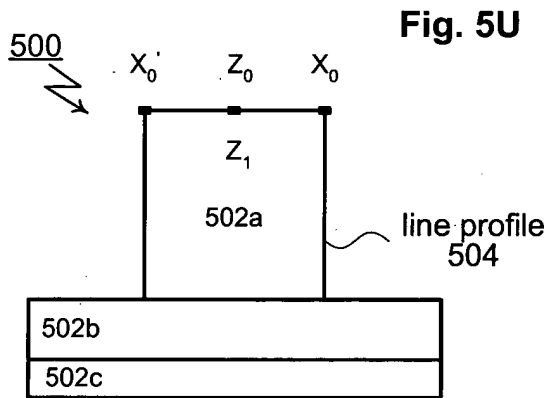
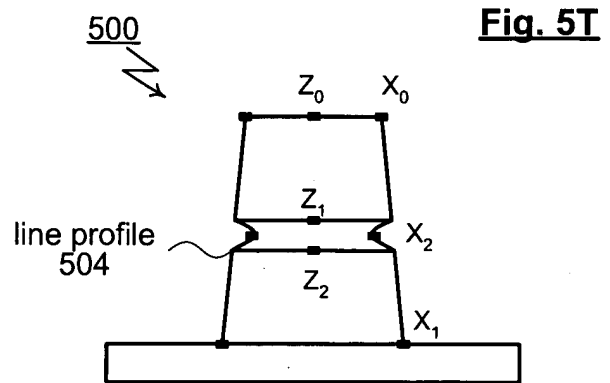
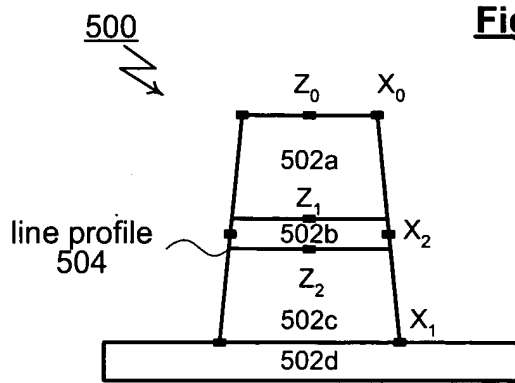


Fig. 6

600

600

602

SE/BB coefficients

Wavelength(nm)

1

0.5

0

-0.5

-1.0

100

200

300

400

500

600

700

800

Height (nm)

Pitch(nm)

350

300

250

200

150

100

50

0

0

50

100

150

200

250

300

604

606

608

☐ Use Global Shape

☐ Draw slices

Reset

Number of Films: 5

Number of Layers in Lines: 1

Number of spacers: 0

Num of trench fills: 0

Export ini file

Pick data file

Calc Once

Calc & Fit

Stop Fitting

CD Film Structure

PR

SIARC

Poly

Thermal oxide

Crystalline Si

☐ Use material lib

PR

Name:

PR Thickness:

of Slices

width

Add a Width

Delete a Width

Norm:

Min:

Max:

Fitting:

N Tries

100.00000

0.000000

400.00000

Yes

0

1

Snap to top:

0.000000

500.00000

Yes

0

Global Parameters

From:

To:

Step:

Max iterations:

Technology:

Wavelength range (nm):

190

780

5

5

SE+DC

Norm:

Min:

Max:

Fitting:

Show More Parameters

Pitch (nm):

500.00000

100.0000

1000.0000

No

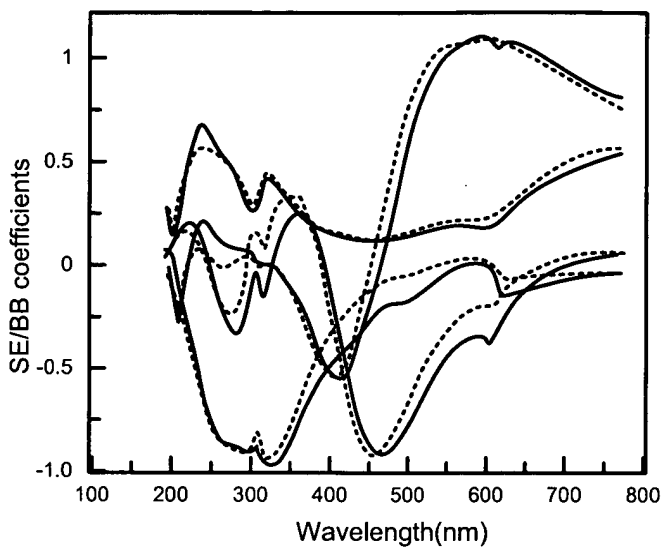


Fig. 7

602

604

Fig. 8

☐ Use Global Shape
☐ Draw slices

Number of Films:

Number of spacers:

Number of Layers in Lines:

Num of trench fills:

CD Film Structure ☐ Use material lib

PR
SiARC
Poly
Thermal oxide
Crystalline Si

Fig. 9

606

Name:	Norm:	Min:	Max:	Fitting:	N Tries
PR Thickness:	110.00000	0.000000	400.00000	Yes ▼	0
# of Slices	1	Snap to top: <input type="checkbox"/>			
width	45.610001	0.000000	500.00000	Yes ▼	0

Add a Width Delete a Width

Fig. 10

608

Global Parameters					
	From:	To:	Step:	Max Iterations:	Technology:
Wavelength range (nm):	190	780	5	5	SE+DC ▼
	Norm:	Min:	Max:	Fitting:	
Pitch (nm):	500.00000	100.0000	1000.0000	No ▼	Show More Parameters

Fig. 11

606

More fitting params:				
	Norm:	Min:	Max:	Fitting:
Measurement angle:	0.0000	-10.0000	10.0000	No ▼
Mixing factor:	0.0033	0.0000	1.0000	Yes ▼
Sidewall:	0.0000	0.0000	1000.000	No ▼
Eccentricity:	0.0000	0.0000	1.0000	No ▼

More control params:	
No Orders:	9
No Processors:	1
Model Option:	FTM-Conical ▼
Fitting Option:	Levenberg-Marquardt ▼
# of Phis(SE):	1
# of Thetas(SE):	2
# of Phis(BB):	1
# of Thetas(BB):	2
Interpolation:	Cubic-Spline ▼
Spline option:	2
Slicing option:	Adaptive ▼
Slice Scale:	2
Tolerance:	2

Fig. 12A

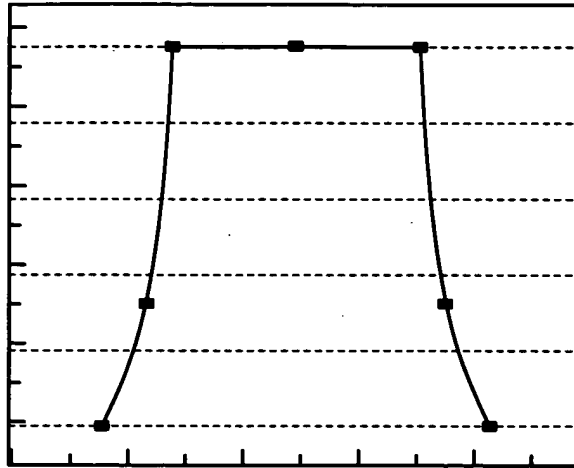


Fig. 12B

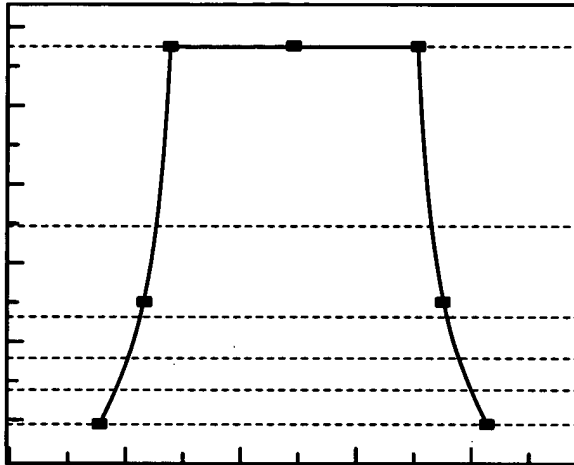


Fig. 12C

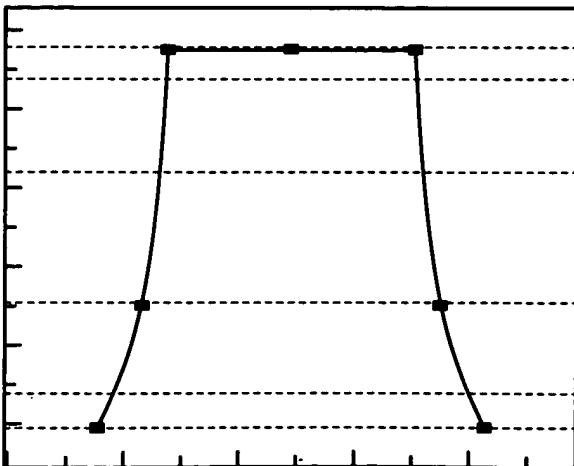


Fig. 13

610 ↘

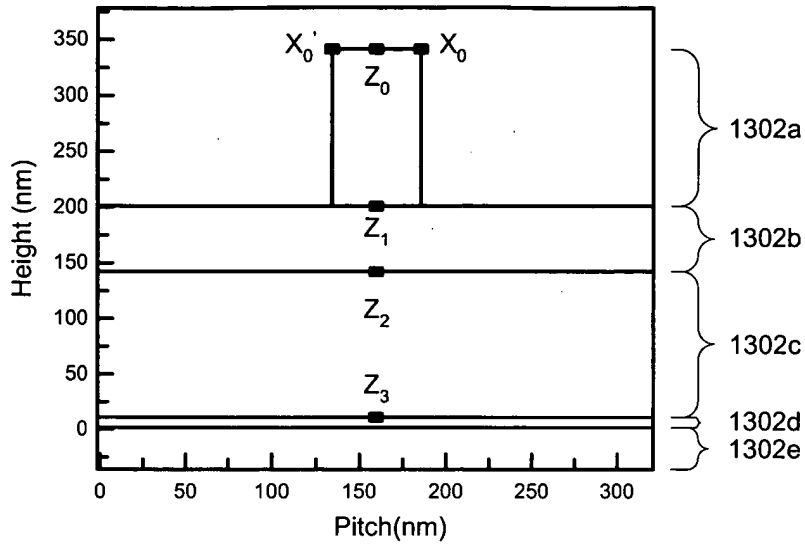


Fig. 14A

604 ↘

☐ Use Global Shape Number of Films: Number of spacers:

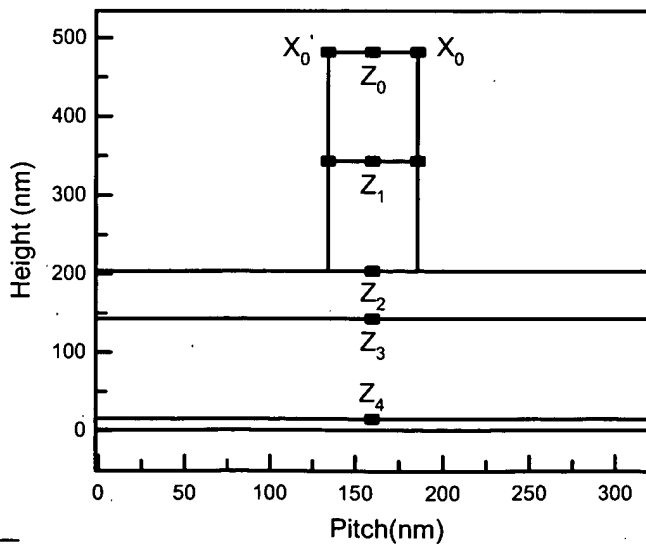
☐ Draw slices Number of Layers in Lines: Num of trench fills:

CD Film Structure ☐ Use material lib

PR
PR
SiARC
Poly
Thermal oxide
Crystalline Si

Fig. 14B

610 ↘



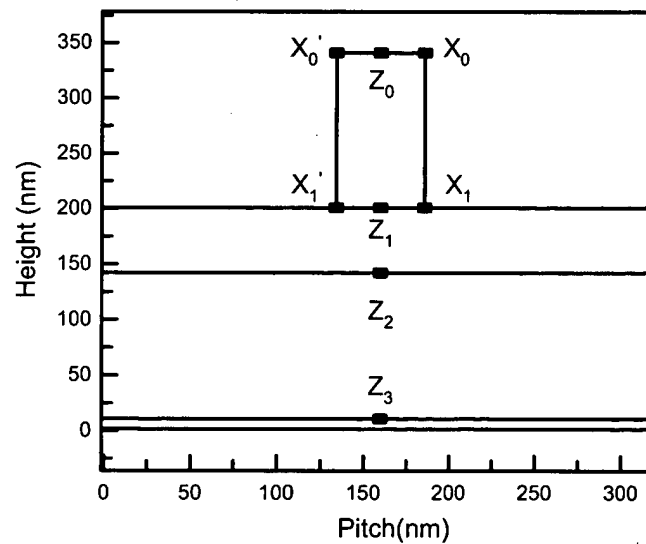
606 ↘

Fig. 15A

PR		Add a Width		Delete a Width	
Name:	Norm:	Min:	Max:	Fitting:	N Tries
PR Thickness:	<input type="text" value="100.00000"/>	<input type="text" value="0.000000"/>	<input type="text" value="400.00000"/>	Yes ▼	<input type="text" value="0"/>
# of Slices	<input type="text" value="1"/>	Snap to top: <input type="checkbox"/>			
width	<input type="text" value="45.610001"/>	<input type="text" value="0.000000"/>	<input type="text" value="500.00000"/>	Yes ▼	<input type="text" value="0"/>
width	<input type="text" value="40.810001"/>	<input type="text" value="0.000000"/>	<input type="text" value="500.00000"/>	Yes ▼	<input type="text" value="0"/>

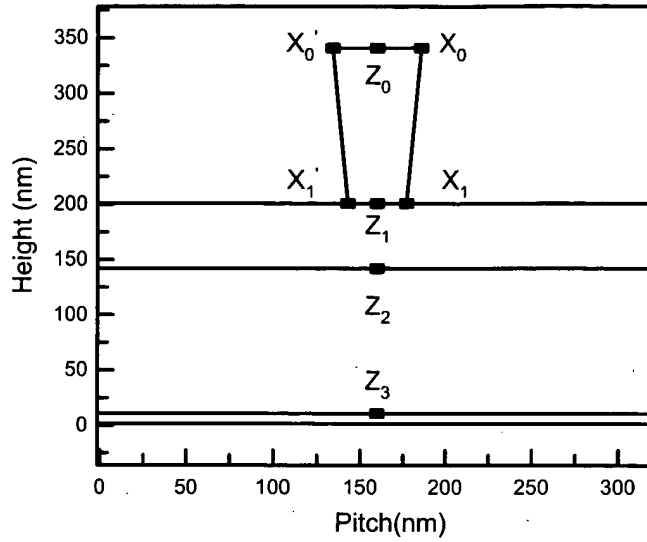
610 ↘

Fig. 15B



610 ↘

Fig. 15C



606 ↘

Fig. 15C

PR						Add a Width	Delete a Width
Name:	Norm:	Min:	Max:	Fitting:	N Tries		
PR Thickness:	<input type="text" value="100.00000"/>	<input type="text" value="0.000000"/>	<input type="text" value="400.00000"/>	Yes <input type="button" value="v"/>	<input type="text" value="0"/>		
# of Slices	<input type="text" value="1"/>	Snap to top: <input type="checkbox"/>					
width	<input type="text" value="45.610001"/>	<input type="text" value="0.000000"/>	<input type="text" value="500.00000"/>	Yes <input type="button" value="v"/>	<input type="text" value="0"/>		
width	<input type="text" value="40.810002"/>	<input type="text" value="0.000000"/>	<input type="text" value="500.00000"/>	Yes <input type="button" value="v"/>	<input type="text" value="0"/>		

Fig. 16A

604

☐ Use Global Shape
 ☐ Draw slices

Number of Films: 5
 Number of spacers: 0
 Export Ini file
Calc Once

Number of Layers in Lines: 2
 Num of trench fills: 0
 Calc & Fit

Reset
Pick data file
Stop Fitting

CD Film Structure

Darc_600t

Black Diamond

Black Diamond

Blok

Cu

☐ Use material lib

610

Fig. 16B

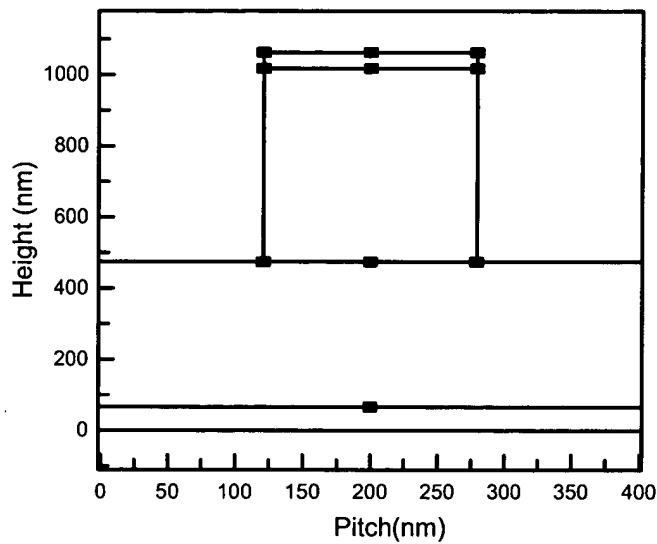
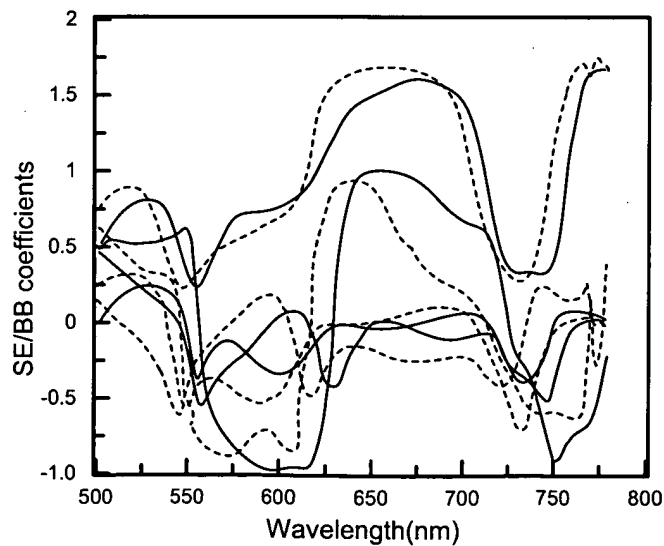


Fig. 16C



602

610 ↗

Fig. 16D

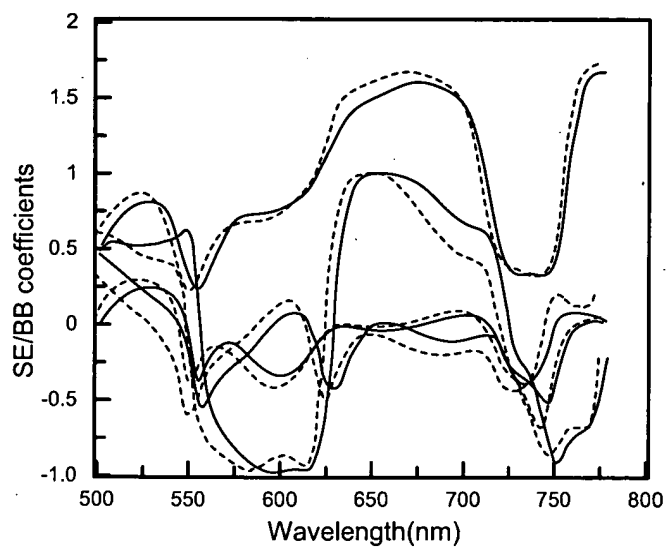
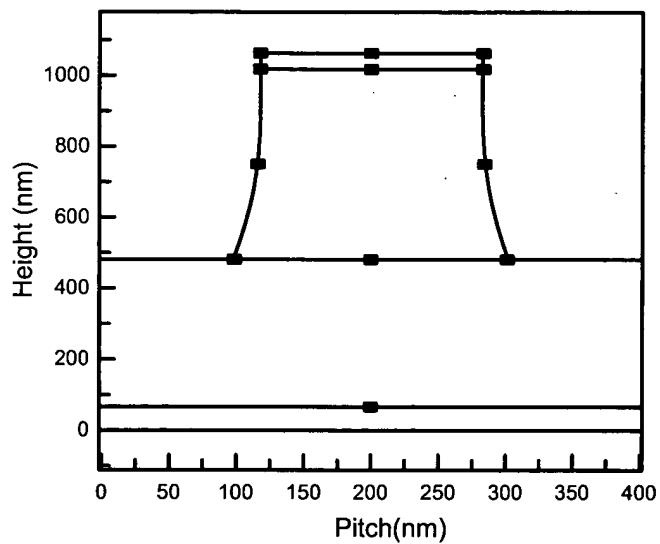


Fig. 16E

↖ 602

610 ↗

Fig. 16F

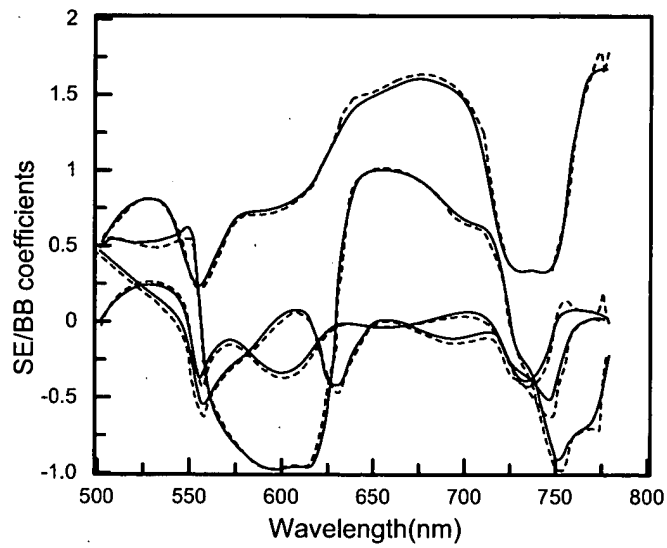
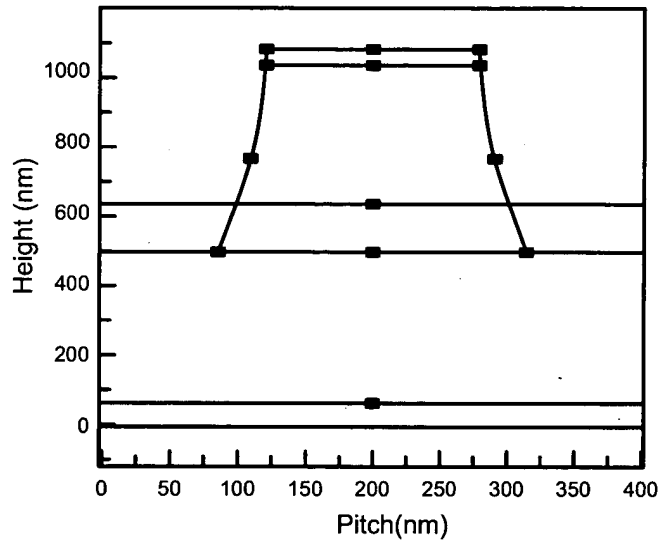


Fig. 16G

↖ 602

Fig. 17

